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There are numerous exact references to the literature of the subject on pages 165–167, 227–228, 260–261, 307–308, 324–325, 340–341, 442–444, 506–508, 533–534.

NOTES.

An author and subject index (4 + 152 pages) for the first fifty years of the *Sitzungsberichte der mathematisch-physikalischen Klasse der kgl. Bayerischen Akademie der Wissenschaften zu München* was prepared by A. Hilsenbeck and published in 1913.

D. M. Y. Sommerville's *The Elements of Non-Euclidean Geometry* has appeared with "Chicago . . . Open Court . . . , 1919" on the title page. The work does not differ, except in title page, from that published by Bell of London, in 1914.

Rand McNally of Chicago published in 1918 *Plane Geometry* (Price $1.25) by MABEL SYKES and C. E. COMSTOCK. Mr. Comstock is a member of the Mathematical Association of America and a professor of mathematics in the Bradley Polytechnic Institute.

Two other members of the Association, MATILDA AUERBACH, supervisor of mathematics in the Ethical Culture High School, New York City, and C. B. WALSH, principal of the Friends Central School, Philadelphia, are the authors of *Plane Geometry* (Philadelphia, Lippincott, 1920, 18 + 383 pp. price $1.32), in the Lippincott's School Text Series edited by W. F. Russell, dean of the College of Education, State University of Iowa. The three volumes of *Applied Arithmetic, the Three Essentials* in this same series are by Professor N. J. LENNES, of the University of Montana, and Professor FRANCES JENKINS, of the University of Cincinnati. 1919–1920. 12mo. 11 + 283 pp.; 9 + 294 pp.; 9 + 340 pp. Price 72 + 80 + 88 cents).

Quotation from *The Degradation of the Democratic Dogma.* By Henry Adams. New York, Macmillan, 1919; "The Rule of Phase applied to history" (1909) pages 272–274:

> ". . . Static electricity already lay beyond the legitimate domain of sensual science, while beyond static electricity lay a vast supersensual ocean roughly called the ether, which the physicists and chemists, on their old principles, were debarred from entering at all, and had to be dragged into, by Faraday and his school. Beyond the ether, again, lay a vast region, known to them as the only substance which they knew or could know—their own thought,—which they positively refused to touch.
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> "Yet the physicists here, too, were helpless to escape the step, for where they refused to go as experimenters, they had to go as mathematicians. Without the higher mathematics they could no longer move, but with the higher mathematics, metaphysics began. There the restraints of physics did not exist. In the mathematical order, infinity became the invariable field of action, and not only did the mathematician deal habitually and directly with all sorts of infinities, but he also built up hyper-infinities, if he liked, or hyper-spaces, or infinite hierarchies of hyper-space. The true mathematician drew breath only in the hyper-spaces of Thought; he could exist only by assuming that all phases of material motion merged in the last conceivable share of immaterial motion—pure mathematical thought.
>
> The physicist, in self-defence, though he may not deny, prefers to ignore this rigorous con-

sequence of his own principles, as he refused for many years to admit the consequences of Faraday's experiments; but at least he can surely rely upon this admission being the last he will ever be called upon to make. No phase of hyper-substance more subtle than thought can ever be conceived, since it could exist only as his own thought returning into itself. Possibly, in the inconceivable domains of abstraction, the ultimate substance may show other sides or extensions, but to man it can be known only as hyperthought,—the region of pure mathematics and metaphysics,—the last and universal solvent.

"There even mathematics must stop. Motion itself, ended; even thought became merely potential in this final solution. The hierarchy of phases was complete."

ARTICLES IN CURRENT PERIODICALS.

ANNALS OF MATHEMATICS, second series, volume 21, no. 2, December, 1919 (published February, 1920): "A property of cyclotomic integers and its relation to Fermat's last theorem" by H. S. Vandiver, 73–80; "Surfaces of rotation in a space of four dimensions" by C. L. E. Moore, 81–93; "The circle nearest to n given points, and the point nearest to n given circles" by J. L. Coolidge, 94–97; "Singular solutions of differential equations of the second order" by E. M. Coon, 98–103; "Note on a class of integral equations of the second kind" by C. E. Love, 104–117; "Concerning sense on closed curves in non-metrical plane analysis situs" by J. R. Kline, 118-119; "On the theory of summability" by G. James, 120–127; "On the consistency and equivalence of certain generalized definitions of the limit of a function of a continuous variable" by L. L. Silverman, 128–140.

BULLETIN OF THE AMERICAN MATHEMATICAL SOCIETY, volume 26, no. 4, January, 1920: "The October meeting of the American Mathematical Society" by F. N. Cole, 145–151; "The October meeting of the San Francisco Section" by B. A. Bernstein, 152–155; "On the proof of Cauchy's integral formula by means of Green's formula" by J. L. Walsh, 155–157; "A set of completely independent postulates for the linear order η" by M. G. Gaba, 158–159; "Certain properties of binomial coefficients" by W. D. Cairns, 160–164; "The work of Poincaré on automorphic functions" [review of *Oeuvres de Henri Poincaré*, tome II (Paris, 1916)] by G. D. Birkhoff, 164–172; "A brief account of the life and work of the late Professor Ulisse Dini" by W. B. Ford, 173–177; "Shorter Notices," 177–183; "Notes," 184–188; "New publications," 189–192—No. 5, February: "Integro-differential equations with constant limits of integration" by I. A. Barnett, 193–203; "On a pencil of nodal cubics" by N. Altshiller-Court, 203–211; "Definition and illustrations of new arithmetical group invariants" by E. T. Bell, 211–223; "Matrices and determinoids" [review of C. E. Cullis's *Matrices and Determinoids* (Cambridge, 1913–1918)] by J. B. Shaw, 224–233; "Notes," 233–237; "New publications," 237–240.

L'ENSEIGNEMENT MATHÉMATIQUE, volume 20, no. 6, January, 1920: "Sur l'élimination algébrique" by C. Riquier, 405–421; "Nouveaux théorèmes sur le viriel de forces et leurs applications géométriques et mécaniques" by F. Boulad, 421–432; "Sur les foyers rationnels d'une courbe algébrique" by E. Turrière, 433–436; Chronique, Bibliographie, Bulletin Bibliographique, 436–462; Table de Matières, 463–468; Supplément, "Spaco" by R. de Saussure, 12 pages [Specimen of the international language "Espérantide (conciliation de l'Esperanto et de l'Ido)." The first sentences are: "En spaco existas sep, kay nur sep, figuron, kiun estas nur pozician, t.e., kiun entenas nenia grando. Lu estas (fig. 1): 1. La *punkto* (*P*). Irg ni punkto estas nura pozicio kay havas neni amplexo; punkto povas rotaci omnimanere sur si self, ne cestante esti la sama punkto.

2. La *reglo* (*R*), or rekta senfina linio, konsiderata kom spacelemento, kom nedivizibla tuto (kay ne kom serio de punkton). Irg ni reglo estas nura pozicio kay enhavas nenia grando; reglo povas gliti or rotaci sur si self, ne cestante esti la sama reglo."].

THE MATHEMATICS TEACHER, volume 12, no. 2, December, 1919: "Certain undefined elements and tacit assumptions in the first book of Euclid's Elements" by H. E. Webb, 41–60; "Association of mathematics teachers of New Jersey. Report of the committee of first-year high-school mathematics," 61–74; "New books," 75–76; "Notes and News," 77–88.

MONIST, volume 30, no. 1, January, 1920: "The analytical treatment of Newton's problems" by P. E. B. Jourdain, 19–36 [First paragraph: "It is a great help to the proper understanding of the meaning of Newton's propositions to consider the formulation of these propositions in analytical language. In this article, after a mention is made of Leibniz's analytical work of 1689 (§ I), Varignon's of 1690 (§ II), Maclaurin's of 1742 (§ III), and of some work of Johann Bernoulli, Keill, Hermann, and others near the beginning of the eighteenth century (§ IV), the contributions